Does growing location and altitude affect macadamia tree yields?

Other

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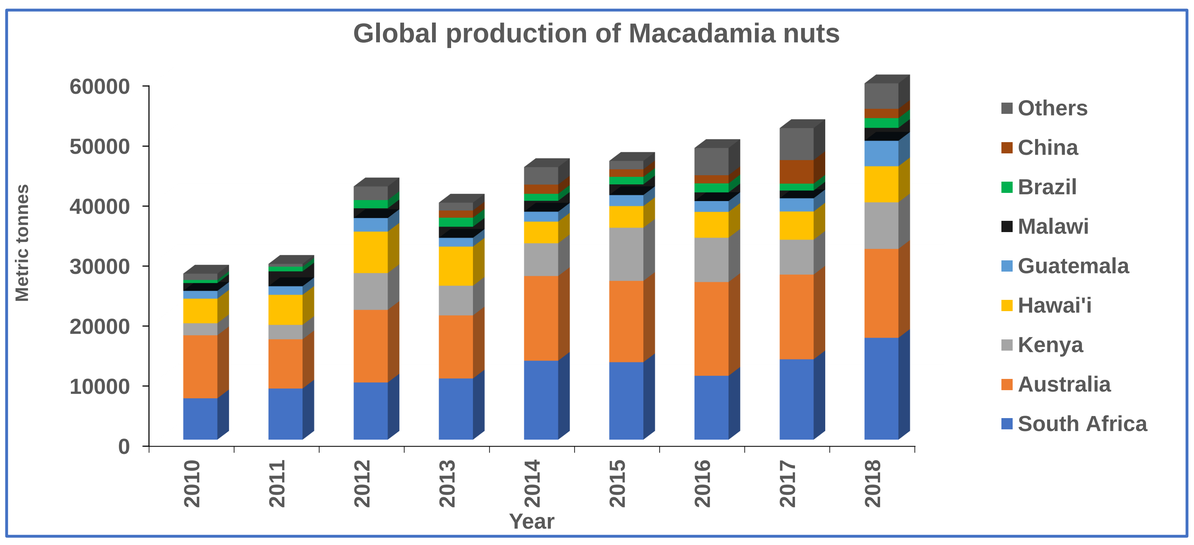
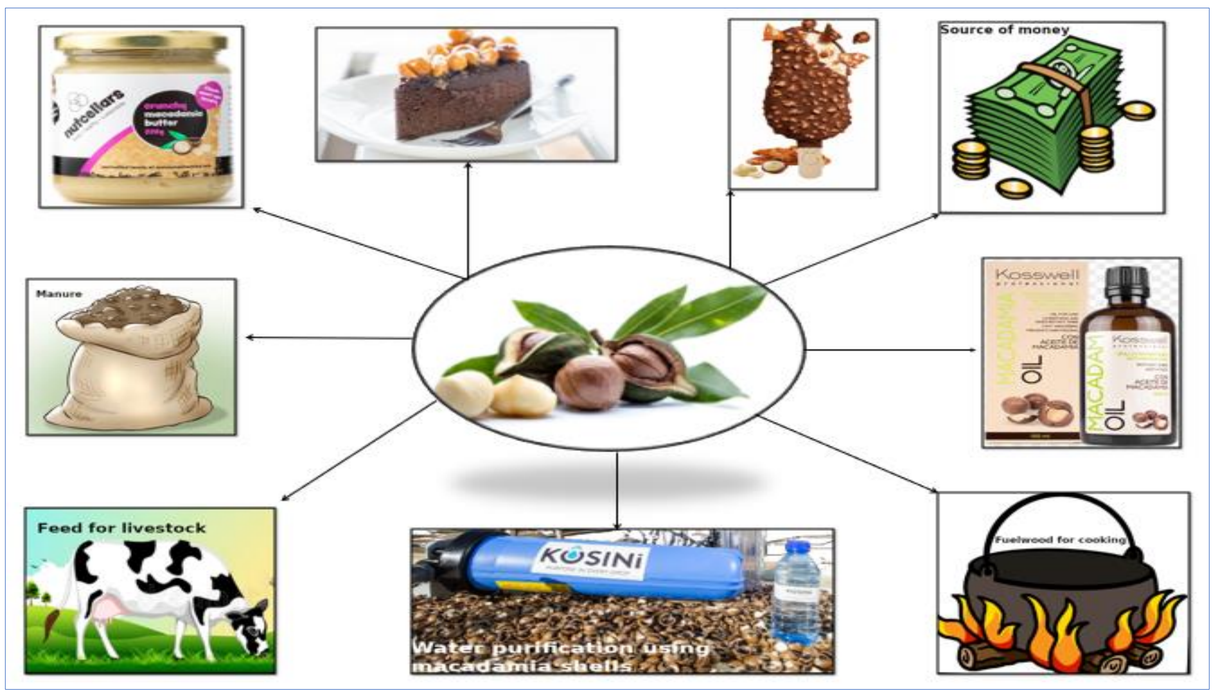
1. What are macadamia nuts?

- *Macadamia F. Muell* is indigenous to the coastal rain forest areas of Australia.

- The crop has a high market value (USD$18/kg) due to high demand globally.
- Macadamia nuts are an important food and cash crop in Malawi.
- Malawi is the sixth largest producer of macadamia nuts in the world and has the potential to become one of the leading producers.
- This is as a result of optimum altitude and climate conditions for plant growth and development.



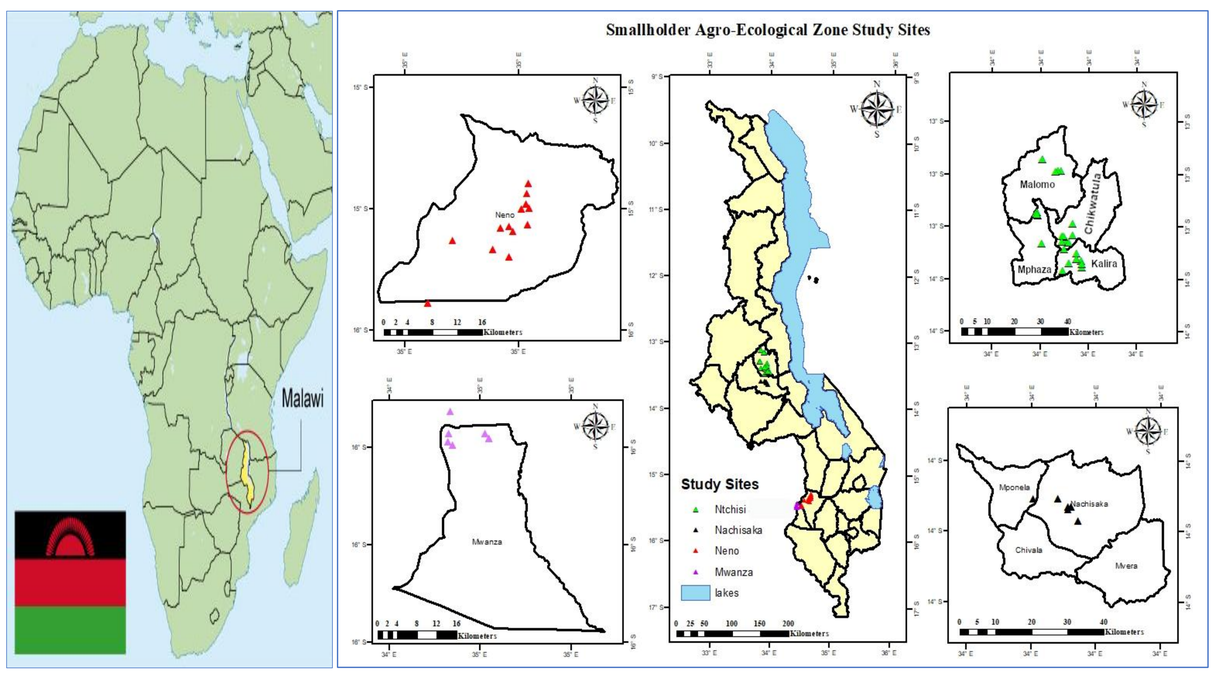
2. Why macadamia nuts?



3. Why promote macadamia nuts in Malawi?

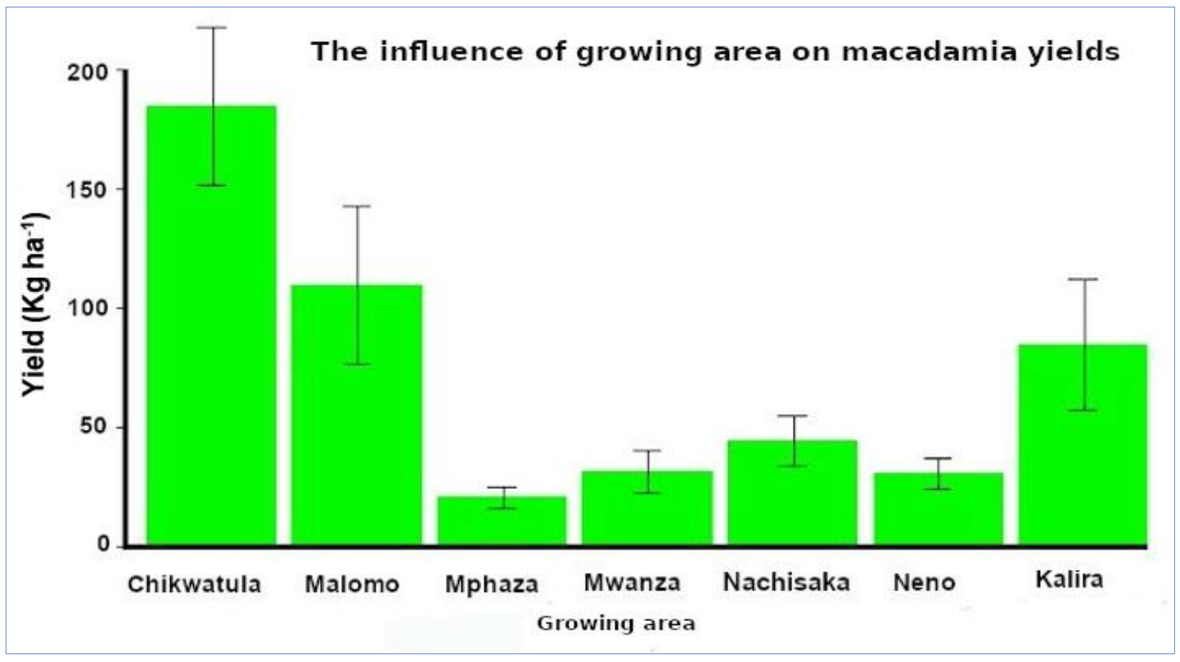
- Macadamia nuts are used to supplement maize-based diets thus assisting in **No Hunger**.
- Macadamia nuts are a suitable alternative cash crop to tobacco thus **Ending Poverty** in this lifetime**.**
- However, macadamia kernel yields are still very low (<500kg ha^{-1}) and vary among growing areas.
- This research investigates the influence of growing area & altitude on macadamia tree growth & yields.

4. Study sites



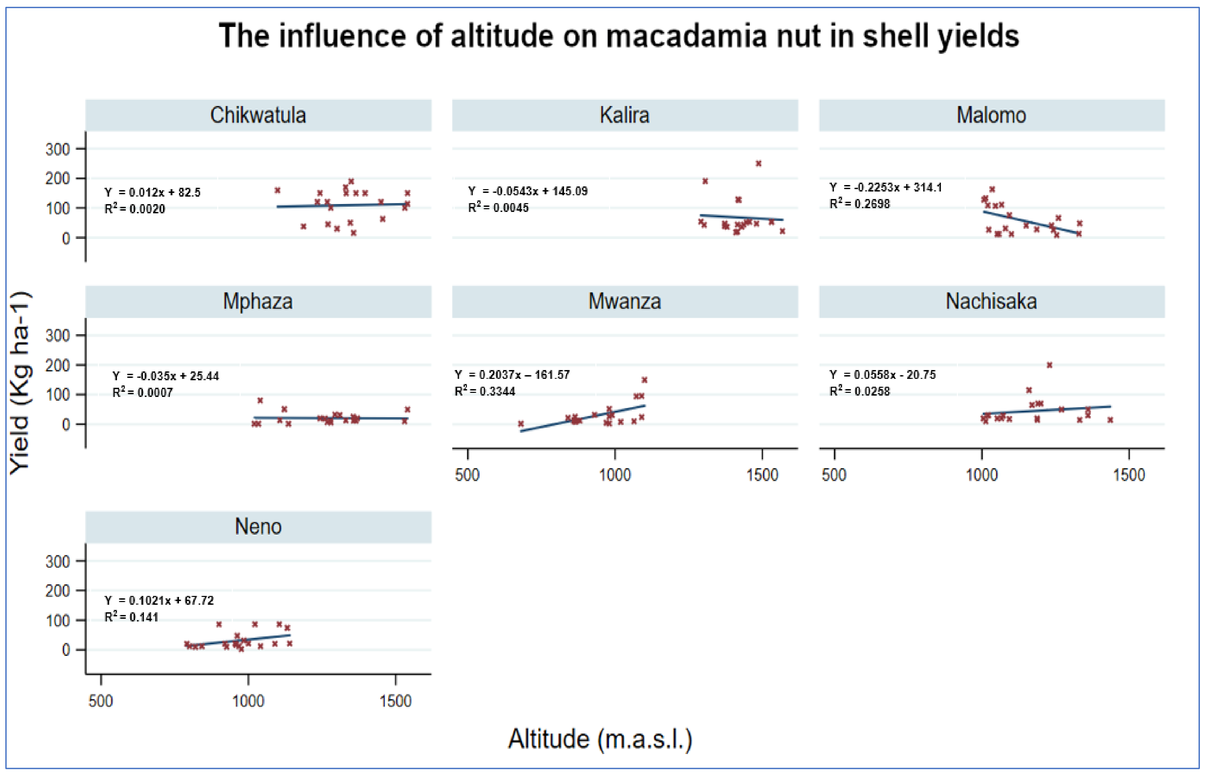
5. Macadamia yield and tree growing location

- Macadamia yields among growing areas significantly varied at **p≤0.001.**
- Highest yields were observed in Chikwatula (184 kg ha^{-1}) and lowest yields in Mphaza (20 kg ha^{-1}).



6. Macadamia yield and altitude

- Significant yield responses were also observed as a result of altitude on macadamia trees.
- Positive correlations between altitude and yields were observed in Chikwatula, Mwanza, Nachisaka and Neno.
- Negative correlations were observed in Kalira, Malomo and Mphaza growing areas.



7. Conclusions

- Macadamia yields were influenced by the growing area which could be due to different climate conditions.
- Macadamia trees respond differently to changes in altitude.
- Yields increased with altitude, but after 1300 m.a.s.l. the yields tended to decrease.

8. Future work

- Conduct a social-economic study on smallholder constraints of macadamia nut production in Malawi.
- Collect yield data specific on five promising clones identified together with smallholders.
- Analyse soil samples for physical & chemical properties to inform yield constraints.
- Collect past and future climatic data for site suitability modelling.

9. References

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10. Acknowledgements

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